

The Project Helios Documents Collection, 1969-1986

1.2 cubic feet

JPL 97

History

The Helios Project was named after the Greek god of the Sun, who carried the Sun across the sky in his chariot. The project was a joint space flight mission between the United States of America and the Federal Republic of Germany to investigate the innermost parts of the Solar System. It was the first multi-national space exploration project. Helios 1 and 2 were the first two missions to venture inside the orbit of Mercury.

The project originated in 1966, when the United States agreed it would undertake a major cooperative space project with the express purpose of substantially increasing and demonstrating the space technological capability of Germany. A Memo of Understanding was signed between the National Aeronautics and Space Administration (NASA) and the German Ministry for Scientific Research in 1969. Germany would provide the spacecraft and seven German experiments. The United States would provide the launch vehicles and facilities, three experiments, and tracking and data acquisition from the Deep Space Network (DSN) run by the Jet Propulsion Laboratory (JPL), and technical training and advice. Helios Project was the first project to use the Titan 3E/Centaur D-1T launch vehicle.

Two spacecraft, each weighing around 815 pounds (370 kg) were sent to within 27 million miles of the Sun, and carried 10 scientific instruments: five experiments to investigate the behavior of interplanetary plasma, three experiments to investigate cosmic rays, and two experiments to investigate micrometeoroids. Both spacecraft were also used to investigate the solar corona near outer conjunction with the Earth. The polarized signals from the spacecraft to Earth (the Faraday Effect) was a source of information on the state of the solar corona and its general behavior.

Helios 1 was launched from Cape Canaveral on December 10, 1974. Helios 2 was launched from Cape Canaveral on January 15, 1976. Both spacecraft were in heliocentric orbits, with orbital periods of 190 days.

Helios 2 suffered a catastrophic fault on March 21, 1980 when an automatic switching of the onboard power system damaged the traveling wave tube amplifier of the high power radio frequency transmitter. After several attempts to get the spacecraft back into operation, Helios 2 was declared ended on January 12, 1981 when the spacecraft was commanded off. Helios 1 continued gathering scientific data about plasma waves in the Solar Wind for at least ten more years.

Provenance

The collection was compiled by Nicholas A. Renzetti, Chairman of the Tracking and Data Systems Subgroup for the Helios Project from 1968-1976. Renzetti was responsible for the configuration and operation of the Deep Space Network (DSN), which received all data from the spacecraft and generated science data on Earth for the Helios Navigation and Radio Science experiments. Renzetti was the manager of Section 430, DSN Systems Engineering at JPL. Renzetti also headed the Helios mission support office at JPL.

The collection was transferred from the creator's office to the JPL Archives on September 19, 1991.

Collection Arrangement and Description

The collection was arranged into two series: Proceedings of the Joint Working Group meetings (0.9 cu. ft., 3 boxes), and Correspondence/Miscellaneous Items (0.3 cu. ft., 1 box.)

The Joint Working Group met approximately every six months at sites alternately in the United States and Germany. Co-chairmen were Ants Kutzer, of Gesellschaft für Weltraumforschung (GfW), and Gilbert Ousley, of NASA Goddard Space Flight Center. Proceedings of meetings consisted of memoranda from the chairmen, agendas, attendance lists, and subgroup status reports.

Conservation/Preservation

Standard preparations of documents for long term storage were completed. Reports were separated from any metal attachments when possible, and foldered. Several of the reports were bound publications, and were not foldered. Each bound report has been considered a folder in the file folder list below.

Separation Statement

The collection formed a small but cohesive part of JPL Archives Accession 91-117, which contained numerous disparate project reports, mission status reports and newsletters, science publications, and JPL Technical Reports and Technical Memoranda, and documents pertaining to the Active Magnetospheric Particle Tracer Explorers (AMPTE) Project (JPL 98). These other materials were dispersed and filed with other similar items in the Archives.

Finding Aids

No other finding aids exist for the collection.

FILE FOLDER LIST

Box 1 of 4 – Joint Work Group Meetings

- Fld. 1 First Joint Work Group Meeting, Bonn, September 23-26, 1969
- Fld. 2 *Second Joint Working Group Meeting*, Goddard Space Flight Center, Greenbelt, Maryland, April 27-30, 1970 (bound)
- Fld. 3 Third Joint Working Group Meeting, Bonn-Bad Godesberg, October 5-8, 1970
- Fld. 4 *Fourth Joint Working Group Meeting*, Goddard Space Flight Center, April 28-30, May 3-4, 1971 (bound)
- Fld. 5 Fifth Joint Working Group Meeting, Oberpfaffenhofen, October 20-27, 1971 (Folder 1 of 2)
- Fld. 6 (Folder 2 of 2)

Box 2 of 4

- Fld. 7 *Sixth Joint Working Group Meeting*, Jet Propulsion Laboratory, Pasadena, California, April 26-28, May 2-3, 1972 (bound)
- Fld. 8 *Seventh Joint Working Group Meeting*, Porz-Wahn, October 25-31, 1972 (bound)
- Fld. 9 *Eighth Joint Working Group Meeting*, Kennedy Space Center, Cape Kennedy, Florida, May 7-11, 1973 (bound)
- Fld. 10 *MA&O Meetings with Addenda, Eighth Joint Working Group Meeting* (bound)

Box 3 of 4

- Fld. 11 Ninth Joint Working Group Meeting, Porz-Wahn, November 7-13, 1973 (Folder 1 of 2)
- Fld. 12 (Folder 2 of 2)
- Fld. 13 *Tenth Joint Working Group Meeting*, Jet Propulsion Laboratory, May 15-21, 1974 (bound)
- Fld. 14 *Eleventh Joint Working Group Meeting*, Ottobrunn, May 20-23, 1975 (bound)

Box 4 of 4 – Correspondence/ Miscellaneous Publications

- Fld. 15 Correspondence, 1972-81

- Fld. 16 Project Helios Mission Readiness Review Handbook, November 1974
- Fld. 17 NASA Honor Awards for the Helios Project, 1975
- Fld. 18 General Dynamics, Centaur D-1T, pamphlet, n.d.
- Fld. 19 *The Helios Program and the Sun*, by G. W. Ousley, A. Kutzer, H. J. Panitz, October 1976. 10-page pamphlet, no publication data.
- Fld. 20 *Journal of Geophysics*, Volume 42, no. 6, 1977, Special Issue, "First Scientific Results of the Helios Mission," Edited by H. Porsche.
- Fld. 21 *Das Faraday Rotations Experiment der Helios Mission/ The Faraday Rotation Experiment of the Helios Mission*, by Michael K. Bird, Hans Volland. Radioastronomisches Institut, Universitat Bonn, August 1982 (German language)
- Fld 22. "The Mean Coronal Magnetic Field Determined from HELIOS Faraday Rotation Measurements" by M. Pätzold, M. K. Bird, and H. Volland. *Solar Physics*, August 1986

CATALOG DESCRIPTION

The Project Helios Document Collection, 1969-1986.

1.2 cu. ft. (4 boxes)

The Helios Project was a joint space flight mission between the United States of America and the Federal Republic of Germany to investigate the innermost parts of the Solar System. It involved two spacecraft sent toward the Sun in 1974 and 1976.

The collection is arranged into two series: Proceedings of the Joint Working Group meetings, and Correspondence/Miscellaneous Items. Proceedings of meetings consist of memoranda from the chairmen, agendas, attendance lists, and subgroup status reports. Correspondence and miscellaneous items consist of correspondence, handbooks, pamphlets and reports pertaining to Project Helios which were gathered by Nicholas A. Renzetti.

Tracings

- Project Helios- History
- Jet Propulsion Laboratory (JPL)- History
- National Aeronautics and Space Administration (NASA)- History
- Gesellschaft für Weltraumforschung (GfW)- History
- Renzetti, Nicholas A.
- Kutzer, Ants
- Ousley, Gilbert
- Porsche, Herbert

A part of Accession 91-117.